#### **Animal Waste Management Systems: Livestock**

**TS Goal:** 2 systems

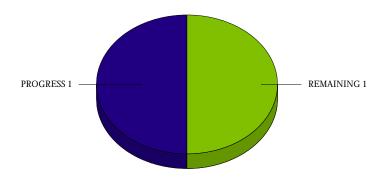
**Definition:** Systems for the proper handling, storage, and use of waste generated by confined animal facilities. These include ponds, lagoons, and tanks for liquid waste, and sheds or pits for solid waste.

**Applied to:** manure acres (stored manure) **Nitrogen Efficiency:** 75% reduction **Phosphorus Efficiency:** 75% reduction

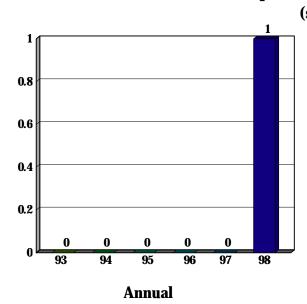
**BMP Rankings:** 

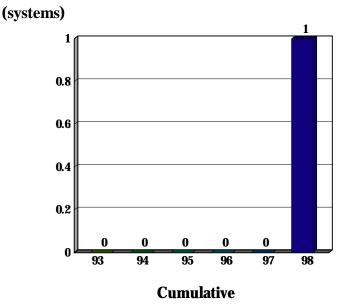
Ability to Reduce Nutrients: High Importance in Statewide Strategy:

**Nitrogen** - High **Phosphorus** - High



1998 Progress for Animal Waste Management
Systems: Livestock
(as a percentage of TS goal, labeled units are systems)





NOTES: (1) Implementation data is organized by State fiscal year (i.e. 1994 = July 1, 1993 - June 30, 1994). (2) Most implementation data is based on State program activities, funding and/or requirements. (3) BMP definitions are from "Maryland's Tributary Strategies for Nutrient Reduction" report, 1995. (4) BMP implementation data is from the Maryland Interagecy Tracking Subcommittee. (5) Efficiencies are average statewide efficiencies. (6) Ongoing improvements to the Watershed Model shift the expected reductions of BMPs with efficiencies listed as "land use conversions" slightly.

### **Animal Waste Management Systems: Poultry**

TS Goal: 320 systems

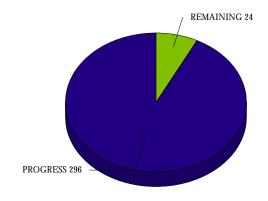
**Definition:** Systems for the proper handling, storage, and use of waste generated by confined animal facilities. These include ponds, lagoons, and tanks for liquid waste, and sheds or pits for solid waste.

**Applied to:** manure acres (stored manure) **Nitrogen Efficiency:** 14% reduction **Phosphorus Efficiency:** 14% reduction

**BMP Rankings:** 

**Ability to Reduce Nutrients:** High **Importance in Statewide Strategy:** 

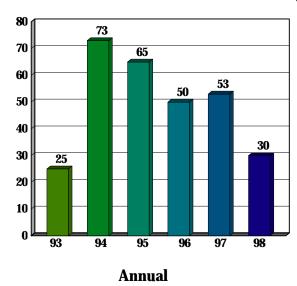
Nitrogen - Medium Phosphorus - Medium

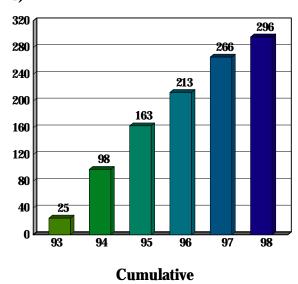


1998 Progress for Animal Waste Management
Systems: Poultry
(as a percentage of TS goal, labeled units are systems)

### **Implementation Record**

(systems)





NOTES: (1) Implementation data is organized by State fiscal year (i.e. 1994 = July 1, 1993 - June 30, 1994). (2) Most implementation data is based on State program activities, funding and/or requirements. (3) BMP definitions are from "Maryland's Tributary Strategies for Nutrient Reduction" report, 1995. (4) BMP implementation data is from the Maryland Interagecy Tracking Subcommittee. (5) Efficiencies are average statewide efficiencies. (6) Ongoing improvements to the Watershed Model shift the expected reductions of BMPs with efficiencies listed as "land use conversions" slightly.

### **Conservation Tillage**

**TS Goal:** 50,000 acres

**Definition:** A process that uses tillage equipment to seed the crop directly into the vegetative cover or crop residue on

the surface, with minimal soil disturbance.

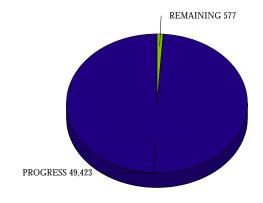
**Applied to:** hitill and lotill land

**Nitrogen Efficiency:** land conversion reduction **Phosphorus Efficiency:** land conversion reduction

**BMP Rankings:** 

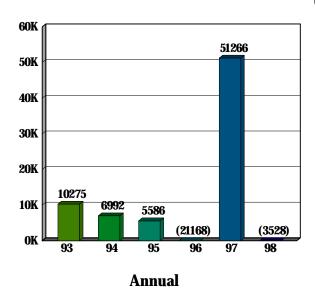
**Ability to Reduce Nutrients:** High **Importance in Statewide Strategy:** 

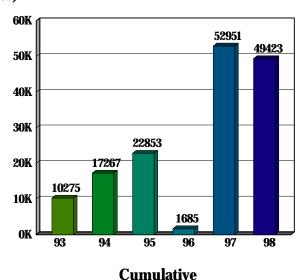
Nitrogen - High Phosphorus - High



1998 Progress for Conservation Tillage (as a percentage of TS goal, labeled units are acres)

### **Implementation Record**





NOTES: (1) Implementation data is organized by State fiscal year (i.e. 1994 = July 1, 1993 - June 30, 1994). (2) Most implementation data is based on State program activities, funding and/or requirements. (3) BMP definitions are from "Maryland's Tributary Strategies for Nutrient Reduction" report, 1995. (4) BMP implementation data is from the Maryland Interagecy Tracking Subcommittee. (5) Efficiencies are average statewide efficiencies. (6) Ongoing improvements to the Watershed Model shift the expected reductions of BMPs with efficiencies listed as "land use conversions" slightly.

#### **Cover Crops**

**TS Goal:** 31,000 acres

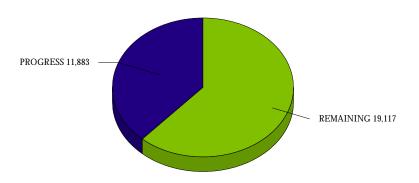
**Definition:** Small grains planted in September or early October on land otherwise fallow with no fertilizer applied. This practice reduces nitrate leaching losses during the winter, and also reduces erosion.

**Applied to:** hitill and lotill land **Nitrogen Efficiency:** 59% reduction **Phosphorus Efficiency:** 44% reduction

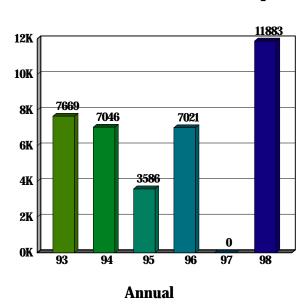
**BMP Rankings:** 

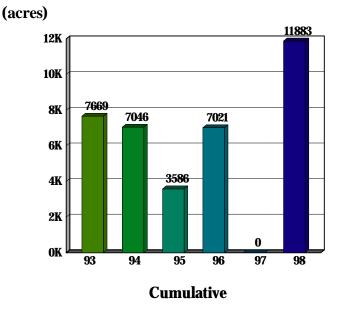
Ability to Reduce Nutrients: High Importance in Statewide Strategy:

**Nitrogen** - High **Phosphorus** - High



1998 Progress for Cover Crops
(as a percentage of TS goal, labeled units are acres)





NOTES: (1) Implementation data is organized by State fiscal year (i.e. 1994 = July 1, 1993 - June 30, 1994). (2) Most implementation data is based on State program activities, funding and/or requirements. (3) BMP definitions are from "Maryland's Tributary Strategies for Nutrient Reduction" report, 1995. (4) BMP implementation data is from the Maryland Interagecy Tracking Subcommittee. (5) Efficiencies are average statewide efficiencies. (6) Ongoing improvements to the Watershed Model shift the expected reductions of BMPs with efficiencies listed as "land use conversions" slightly.

### **Nutrient Management Plan Implementation**

**TS Goal:** 83,000 acres

**Definition:** A comprehensive plan to manage the amount, placement, timing and application of animal waste, fertilizer,

sludge, or other plant nutrients.

Applied to: cropland

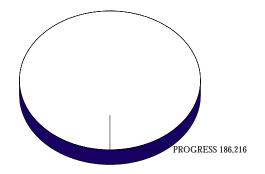
Nitrogen Efficiency: model-derived reduction

Phosphorus Efficiency: model-derived reduction

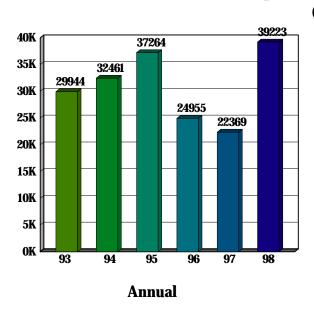
**BMP Rankings:** 

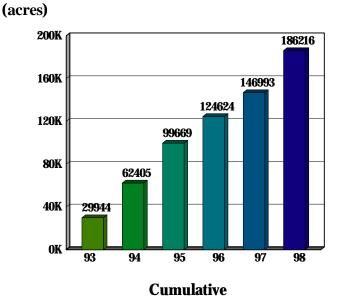
**Ability to Reduce Nutrients:** Medium **Importance in Statewide Strategy:** 

Nitrogen - High Phosphorus - High



1998 Progress for Nutrient Management Plan
Implementation
(as a percentage of TS goal, labeled units are acres)





NOTES: (1) Implementation data is organized by State fiscal year (i.e. 1994 = July 1, 1993 - June 30, 1994). (2) Most implementation data is based on State program activities, funding and/or requirements. (3) BMP definitions are from "Maryland's Tributary Strategies for Nutrient Reduction" report, 1995. (4) BMP implementation data is from the Maryland Interagecy Tracking Subcommittee. (5) Efficiencies are average statewide efficiencies. (6) Ongoing improvements to the Watershed Model shift the expected reductions of BMPs with efficiencies listed as "land use conversions" slightly.

### **SCWQP Implementation and Treatment of Highly Erodible Land**

**TS Goal:** 87,500 acres

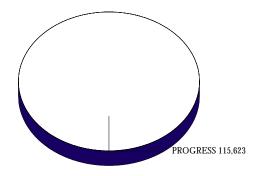
**Definition:** A comprehensive plan addressing natural resource management of farmland directed toward the control of erosion and sediment loss, and management of animal waste or agricultural chemicals.

**Applied to:** cropland and pasture **Nitrogen Efficiency:** 11% reduction **Phosphorus Efficiency:** 21% reduction

**BMP Rankings:** 

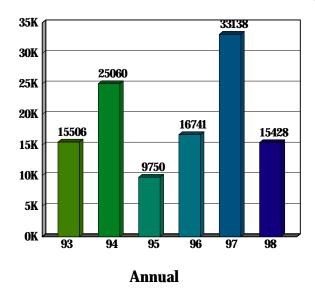
**Ability to Reduce Nutrients:** Low **Importance in Statewide Strategy:** 

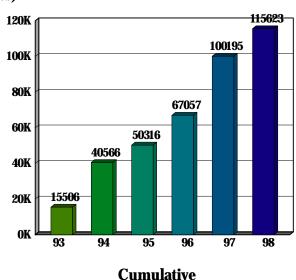
**Nitrogen** - High **Phosphorus** - High



1998 Progress for SCWQP Implementation and Treatment of Highly Erodible Land (as a percentage of TS goal, labeled units are acres)

#### **Implementation Record**





NOTES: (1) Implementation data is organized by State fiscal year (i.e. 1994 = July 1, 1993 - June 30, 1994). (2) Most implementation data is based on State program activities, funding and/or requirements. (3) BMP definitions are from "Maryland's Tributary Strategies for Nutrient Reduction" report, 1995. (4) BMP implementation data is from the Maryland Interagecy Tracking Subcommittee. (5) Efficiencies are average statewide efficiencies. (6) Ongoing improvements to the Watershed Model shift the expected reductions of BMPs with efficiencies listed as "land use conversions" slightly.

#### **Forest Conservation**

TS Goal: 806 acres

**Definition:** Implementation of the Forest Conservation Act, which requires the retention of a portion of forested

lands on any newly developed site.

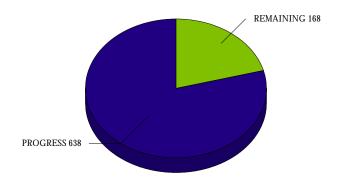
Applied to: urban land

**Nitrogen Efficiency:** land conversion reduction **Phosphorus Efficiency:** land conversion reduction

**BMP Rankings:** 

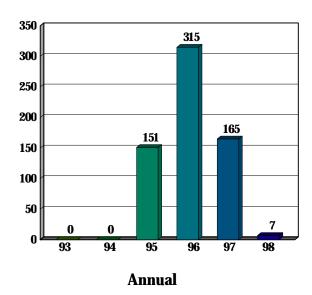
**Ability to Reduce Nutrients:** High **Importance in Statewide Strategy:** 

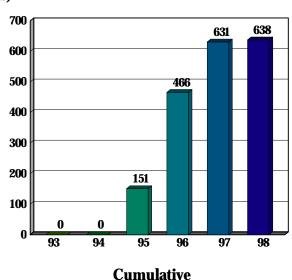
Nitrogen - Medium Phosphorus - Medium



1998 Progress for Forest Conservation (as a percentage of TS goal, labeled units are acres)

### **Implementation Record**





NOTES: (1) Implementation data is organized by State fiscal year (i.e. 1994 = July 1, 1993 - June 30, 1994). (2) Most implementation data is based on State program activities, funding and/or requirements. (3) BMP definitions are from "Maryland's Tributary Strategies for Nutrient Reduction" report, 1995. (4) BMP implementation data is from the Maryland Interagecy Tracking Subcommittee. (5) Efficiencies are average statewide efficiencies. (6) Ongoing improvements to the Watershed Model shift the expected reductions of BMPs with efficiencies listed as "land use conversions" slightly.

#### **Forest Harvesting Practices**

TS Goal: 3,552 acres

**Definition:** Application of regulatory and voluntary best management practices applied to timber harvests, including erosion and sediment control and streamside management

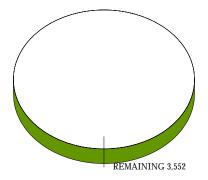
**Applied to:** forest land

**Nitrogen Efficiency:** 50% reduction **Phosphorus Efficiency:** 50% reduction

**BMP Rankings:** 

Ability to Reduce Nutrients: Low Importance in Statewide Strategy:

Nitrogen - Low Phosphorus - Low



1998 Progress for Forest Harvesting Practices (as a percentage of TS goal, labeled units are acres)

### **Implementation Record**

(acres)

**Annual** Cumulative

#### **Forested Buffers**

TS Goal: 180 acres

**Definition:** A linear strip of forest along rivers and streams that filters nutrients and sediment and enhances stream

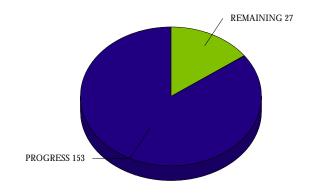
habitat.

**Applied to:** cropland and pasture **Nitrogen Efficiency:** 56% reduction **Phosphorus Efficiency:** 70% reduction

**BMP Rankings:** 

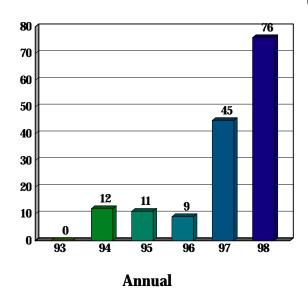
**Ability to Reduce Nutrients:** High **Importance in Statewide Strategy:** 

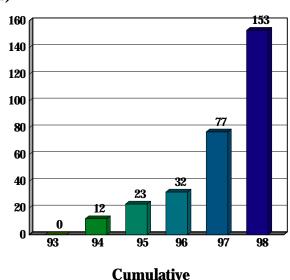
Nitrogen - Medium Phosphorus - Medium



1998 Progress for Forested Buffers (as a percentage of TS goal, labeled units are acres)

#### **Implementation Record**





NOTES: (1) Implementation data is organized by State fiscal year (i.e. 1994 = July 1, 1993 - June 30, 1994). (2) Most implementation data is based on State program activities, funding and/or requirements. (3) BMP definitions are from "Maryland's Tributary Strategies for Nutrient Reduction" report, 1995. (4) BMP implementation data is from the Maryland Interagecy Tracking Subcommittee. (5) Efficiencies are average statewide efficiencies. (6) Ongoing improvements to the Watershed Model shift the expected reductions of BMPs with efficiencies listed as "land use conversions" slightly.

#### **Marine Pumpouts (installation)**

**TS Goal:** 5 marinas

**Definition:** A facility sited at marinas for pumping sewage from boat holding tanks to a dockside storage facility.

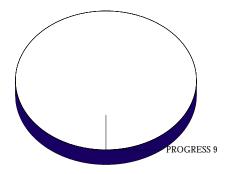
Applied to:

Nitrogen Efficiency: pound reduction Phosphorus Efficiency: pound reduction

**BMP Rankings:** 

Ability to Reduce Nutrients: High Importance in Statewide Strategy:

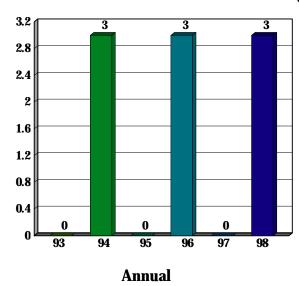
Nitrogen - Medium Phosphorus - Medium

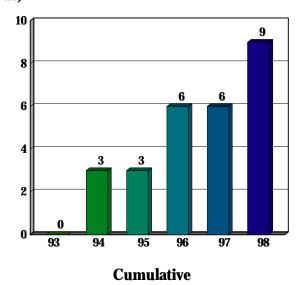


1998 Progress for Marine Pumpouts (installation) (as a percentage of TS goal, labeled units are marinas)

### **Implementation Record**

#### (marinas)





NOTES: (1) Implementation data is organized by State fiscal year (i.e. 1994 = July 1, 1993 - June 30, 1994). (2) Most implementation data is based on State program activities, funding and/or requirements. (3) BMP definitions are from "Maryland's Tributary Strategies for Nutrient Reduction" report, 1995. (4) BMP implementation data is from the Maryland Interagecy Tracking Subcommittee. (5) Efficiencies are average statewide efficiencies. (6) Ongoing improvements to the Watershed Model shift the expected reductions of BMPs with efficiencies listed as "land use conversions" slightly.

#### **Nonstructural Shore Erosion Control**

**TS Goal:** 9,000 linear feet

**Definition:** A practice for stabilizing eroding shorelines by establishing marsh grasses; suitable for sites with lower wave

energy. Also creates wetland habitat.

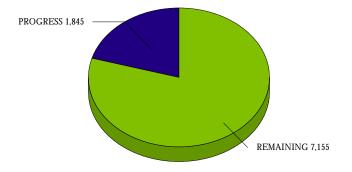
Applied to:

**Nitrogen Efficiency:** 66 lbs per l.f. reduction **Phosphorus Efficiency:** 40 lbs per l.f. reduction

**BMP Rankings:** 

**Ability to Reduce Nutrients:** Low **Importance in Statewide Strategy:** 

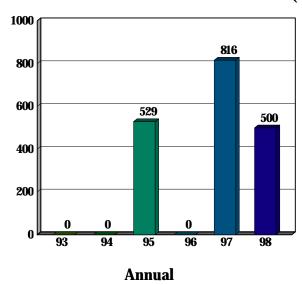
Nitrogen - Medium Phosphorus - Medium

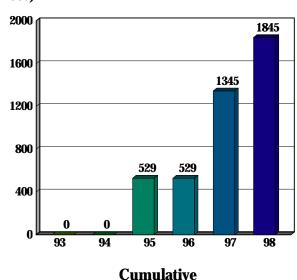


1998 Progress for Nonstructural Shore Erosion Control (as a percentage of TS goal, labeled units are linear feet)

### **Implementation Record**

(linear feet)





NOTES: (1) Implementation data is organized by State fiscal year (i.e. 1994 = July 1, 1993 - June 30, 1994). (2) Most implementation data is based on State program activities, funding and/or requirements. (3) BMP definitions are from "Maryland's Tributary Strategies for Nutrient Reduction" report, 1995. (4) BMP implementation data is from the Maryland Interagecy Tracking Subcommittee. (5) Efficiencies are average statewide efficiencies. (6) Ongoing improvements to the Watershed Model shift the expected reductions of BMPs with efficiencies listed as "land use conversions" slightly.

#### **Structural Shore Erosion Control**

**TS Goal:** 6,000 linear feet

**Definition:** A practice for stabilizing eroding shorelines using stone riprap or timber bulkheads. Suitable for sites with

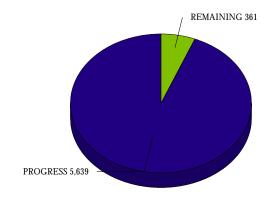
high wave energy. **Applied to:** 

**Nitrogen Efficiency:** 101 lbs per l.f. reduction **Phosphorus Efficiency:** 67 lbs per l.f. reduction

**BMP Rankings:** 

**Ability to Reduce Nutrients:** Low **Importance in Statewide Strategy:** 

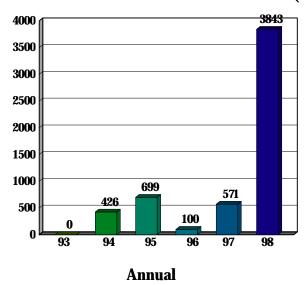
Nitrogen - Medium Phosphorus - Medium

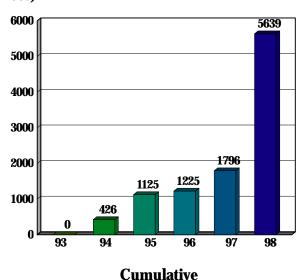


1998 Progress for Structural Shore Erosion Control (as a percentage of TS goal, labeled units are linear feet)

### **Implementation Record**

(linear feet)





NOTES: (1) Implementation data is organized by State fiscal year (i.e. 1994 = July 1, 1993 - June 30, 1994). (2) Most implementation data is based on State program activities, funding and/or requirements. (3) BMP definitions are from "Maryland's Tributary Strategies for Nutrient Reduction" report, 1995. (4) BMP implementation data is from the Maryland Interagecy Tracking Subcommittee. (5) Efficiencies are average statewide efficiencies. (6) Ongoing improvements to the Watershed Model shift the expected reductions of BMPs with efficiencies listed as "land use conversions" slightly.

### **Tree Planting**

TS Goal: 1,530 acres

**Definition:** Includes any tree plantings on any site except

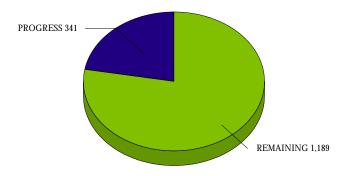
those along rivers and streams. **Applied to:** urban land

**Nitrogen Efficiency:** 0 reduction **Phosphorus Efficiency:** 0 reduction

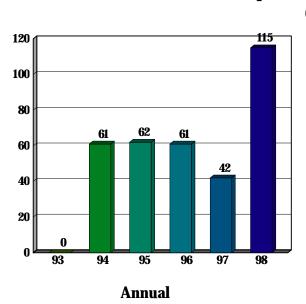
**BMP Rankings:** 

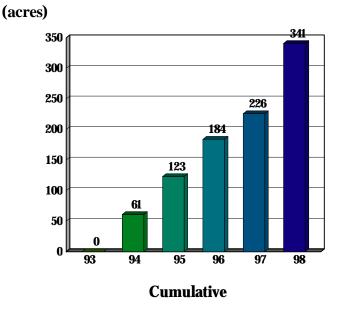
Ability to Reduce Nutrients: Low Importance in Statewide Strategy:

Nitrogen - Low Phosphorus - Low



1998 Progress for Tree Planting (as a percentage of TS goal, labeled units are acres)





NOTES: (1) Implementation data is organized by State fiscal year (i.e. 1994 = July 1, 1993 - June 30, 1994). (2) Most implementation data is based on State program activities, funding and/or requirements. (3) BMP definitions are from "Maryland's Tributary Strategies for Nutrient Reduction" report, 1995. (4) BMP implementation data is from the Maryland Interagecy Tracking Subcommittee. (5) Efficiencies are average statewide efficiencies. (6) Ongoing improvements to the Watershed Model shift the expected reductions of BMPs with efficiencies listed as "land use conversions" slightly.

#### **Enhanced Stormwater Management**

TS Goal: 3,126 acres

**Definition:** The regulatory requirement for the control of Stormwater on all new development, including maintenance on new and existing facilities. Enhancements emphasize water quality controls in addition to water quantity controls.

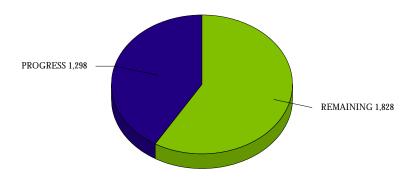
**Applied to:** urban land

**Nitrogen Efficiency:** 33% reduction **Phosphorus Efficiency:** 46% reduction

**BMP Rankings:** 

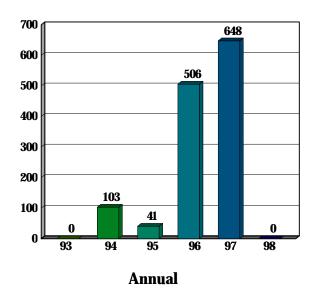
**Ability to Reduce Nutrients:** Medium **Importance in Statewide Strategy:** 

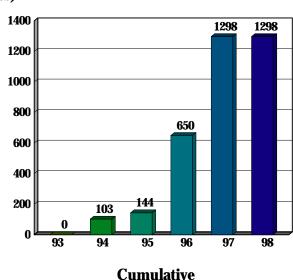
Nitrogen - High Phosphorus - Medium



1998 Progress for Enhanced Stormwater Management (as a percentage of TS goal, labeled units are acres)

### **Implementation Record**





NOTES: (1) Implementation data is organized by State fiscal year (i.e. 1994 = July 1, 1993 - June 30, 1994). (2) Most implementation data is based on State program activities, funding and/or requirements. (3) BMP definitions are from "Maryland's Tributary Strategies for Nutrient Reduction" report, 1995. (4) BMP implementation data is from the Maryland Interagecy Tracking Subcommittee. (5) Efficiencies are average statewide efficiencies. (6) Ongoing improvements to the Watershed Model shift the expected reductions of BMPs with efficiencies listed as "land use conversions" slightly.

#### **Erosion and Sediment Control**

TS Goal: 447 acres

**Definition:** The regulatory requirement for erosion and sediment control on all new development over 5,000 square feet. Reduces the high nutrient and suspended sediment loads during the transitory construction phase.

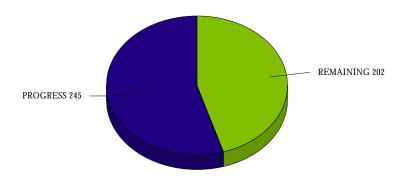
**Applied to:** urban land

**Nitrogen Efficiency:** 33% reduction **Phosphorus Efficiency:** 50% reduction

**BMP Rankings:** 

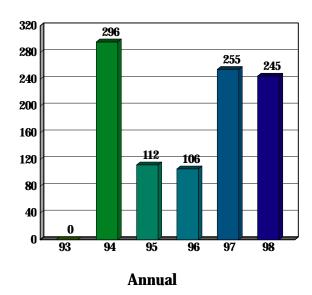
**Ability to Reduce Nutrients:** Medium **Importance in Statewide Strategy:** 

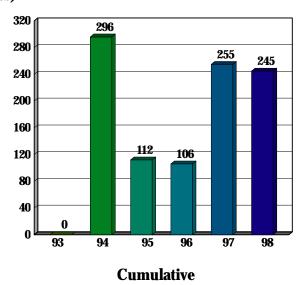
**Nitrogen** - Medium **Phosphorus** - Low



1998 Progress for Erosion and Sediment Control (as a percentage of TS goal, labeled units are acres)

### **Implementation Record**





NOTES: (1) Implementation data is organized by State fiscal year (i.e. 1994 = July 1, 1993 - June 30, 1994). (2) Most implementation data is based on State program activities, funding and/or requirements. (3) BMP definitions are from "Maryland's Tributary Strategies for Nutrient Reduction" report, 1995. (4) BMP implementation data is from the Maryland Interagecy Tracking Subcommittee. (5) Efficiencies are average statewide efficiencies. (6) Ongoing improvements to the Watershed Model shift the expected reductions of BMPs with efficiencies listed as "land use conversions" slightly.

### **Septic Connections**

TS Goal: 415 systems

**Definition:** The connection of failing septic systems to

sewer lines.

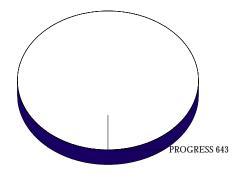
**Applied to:** urban land

**Nitrogen Efficiency:** 55% reduction **Phosphorus Efficiency:** no reduction

BMP Rankings:

**Ability to Reduce Nutrients:** Medium **Importance in Statewide Strategy:** 

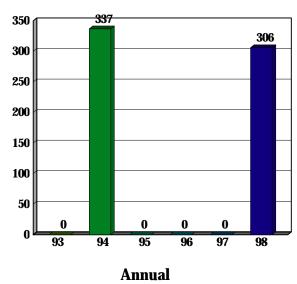
**Nitrogen** - Medium **Phosphorus** - n/a

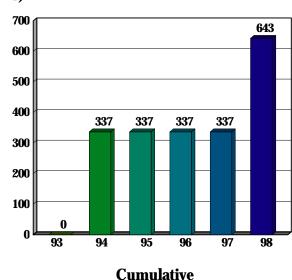


1998 Progress for Septic Connections
(as a percentage of TS goal, labeled units are systems)

### **Implementation Record**

(systems)





NOTES: (1) Implementation data is organized by State fiscal year (i.e. 1994 = July 1, 1993 - June 30, 1994). (2) Most implementation data is based on State program activities, funding and/or requirements. (3) BMP definitions are from "Maryland's Tributary Strategies for Nutrient Reduction" report, 1995. (4) BMP implementation data is from the Maryland Interagecy Tracking Subcommittee. (5) Efficiencies are average statewide efficiencies. (6) Ongoing improvements to the Watershed Model shift the expected reductions of BMPs with efficiencies listed as "land use conversions" slightly.

### **Septic Pumping**

**TS Goal:** 119 systems

**Definition:** Pumping individual septic systems once every three years, the average routine maintenance of these systems.

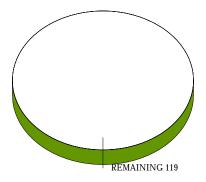
**Applied to:** urban land

Nitrogen Efficiency: 5% reduction Phosphorus Efficiency: no reduction

BMP Rankings:

**Ability to Reduce Nutrients:** Low **Importance in Statewide Strategy:** 

**Nitrogen** - Low **Phosphorus** - n/a



1998 Progress for Septic Pumping (as a percentage of TS goal, labeled units are systems)

### **Implementation Record**

(systems)

**Annual Cumulative** 

#### **Stormwater Management Conversion**

TS Goal: 211 acres

**Definition:** Conversion of dry ponds for Stormwater management to extended detention or retention facilities

which are more effective at nutrient removal.

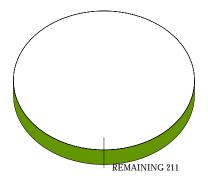
**Applied to:** urban land

**Nitrogen Efficiency:** 33% reduction **Phosphorus Efficiency:** 46% reduction

**BMP Rankings:** 

**Ability to Reduce Nutrients:** Medium **Importance in Statewide Strategy:** 

Nitrogen - Low Phosphorus - Low



1998 Progress for Stormwater Management
Conversion
(as a percentage of TS goal, labeled units are acres)

### **Implementation Record**

(acres)

**Annual** Cumulative

#### **Stormwater Management Retrofits**

TS Goal: 219 acres

**Definition:** Construction of Stormwater facilities on lands

previously developed without such facilities.

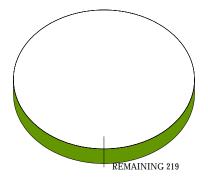
**Applied to:** urban land

**Nitrogen Efficiency:** 33% reduction **Phosphorus Efficiency:** 46% reduction

**BMP Rankings:** 

**Ability to Reduce Nutrients:** Medium **Importance in Statewide Strategy:** 

Nitrogen - Low Phosphorus - Low



1998 Progress for Stormwater Management Retrofits (as a percentage of TS goal, labeled units are acres)

### **Implementation Record**

(acres)

**Annual** Cumulative

#### **Urban Nutrient Management**

TS Goal: 665 acres

**Definition:** A public education program to reduce excess lawn fertilizer use, targeted at suburban residents and

businesses.

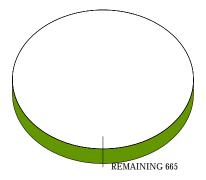
**Applied to:** urban land

**Nitrogen Efficiency:** 17% reduction **Phosphorus Efficiency:** 22% reduction

**BMP Rankings:** 

**Ability to Reduce Nutrients:** Low **Importance in Statewide Strategy:** 

Nitrogen - Medium Phosphorus - Low



1998 Progress for Urban Nutrient Management (as a percentage of TS goal, labeled units are acres)

### **Implementation Record**

(acres)

**Annual** Cumulative